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(54) CORIOLIS MASS FLOWMETER

(57) Abstract:

PROBLEM TO BE SOLVED: To achieve high accuracy and improve heat resistance and pressure resistance by absorbing thermal expansion and vibrations by means of a soft structural body set at both ends of a vibration tube and obstructing a deformation of the tube by a backup part.

SOLUTION: A fluid to be measured is fed to a vibration tube 11, and an oscillator 15' is driven. A vibration amplitude of the vibration tube 11 proportional to an acting Coriolis force is measured. A mass flow rate is operated from a phase difference of an upstream and a downstream vibration detectors 16, 16. Although a soft structural part 13 is deformed at this time because of a thermal expansion and a pressure increase of the fluid, in general usage, the structural part 13 changes its shape freely without touching a backup part 14 of a housing 12 and absorbs the thermal expansion and vibration. However, when an extraordinary thermal expansion or pressure is applied, the structural part is greatly deformed into touch with the backup part 14 and consequently not deformed any more. In other words, the soft structural part 13 lessens influences of the thermal expansion; thereby enabling highly accurate measurements. The soft structural part 13 is prevented

by the backup part 14 from being plastically deformed and broken against the extraordinary thermal expansion or pressure, and improved in heat resistance and pressure resistance.

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